

Fig. 1

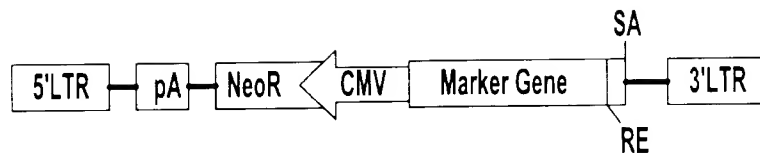


Fig. 2A

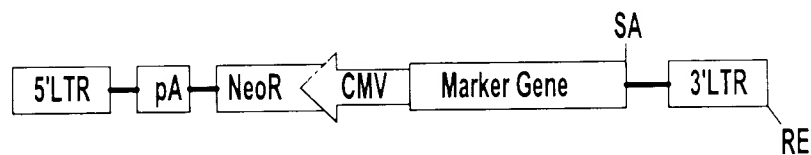


Fig. 2B

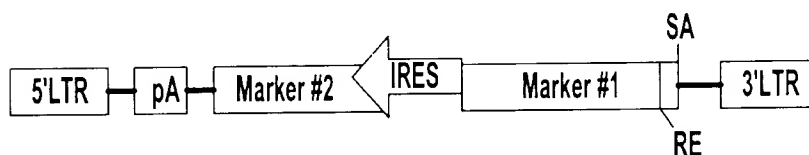


Fig. 2C

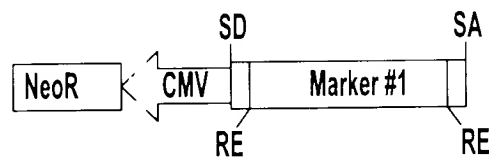


Fig. 2D

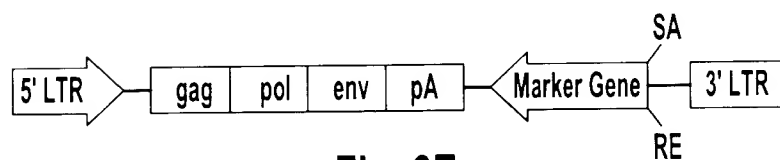


Fig. 2E

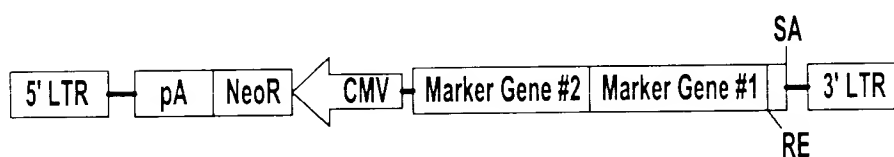
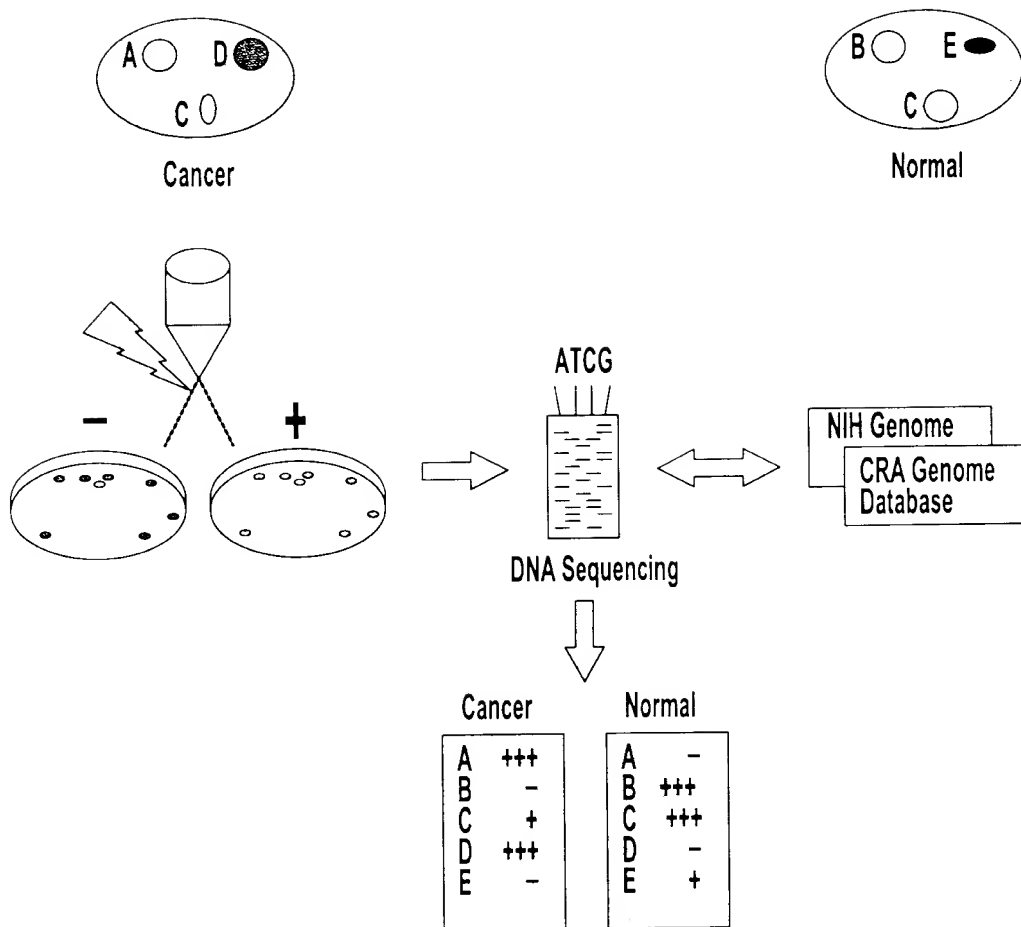
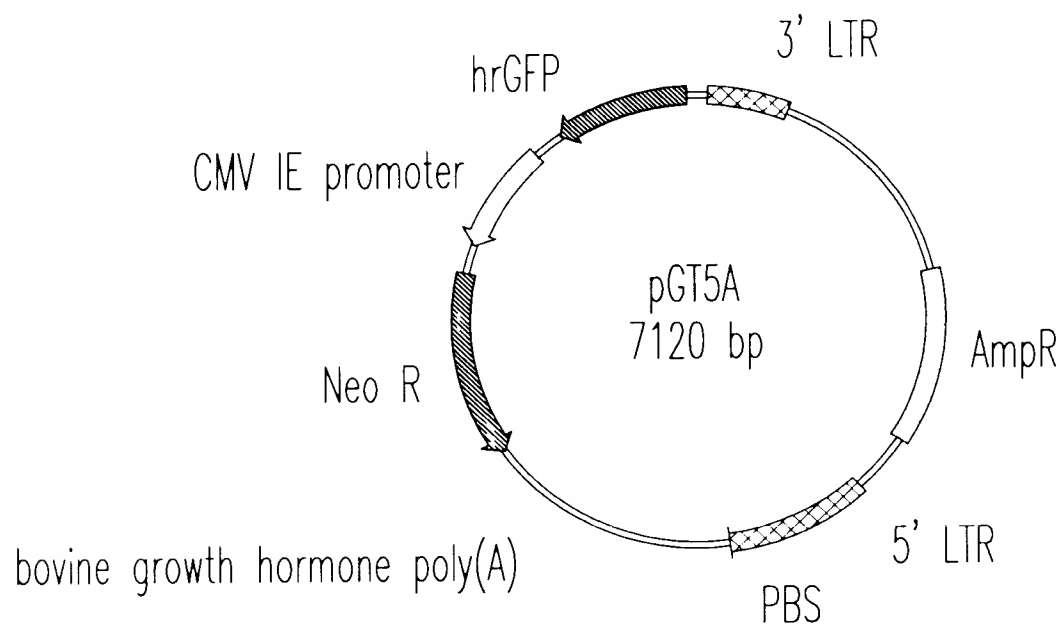


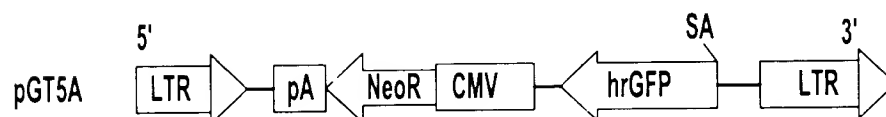
Fig. 2F



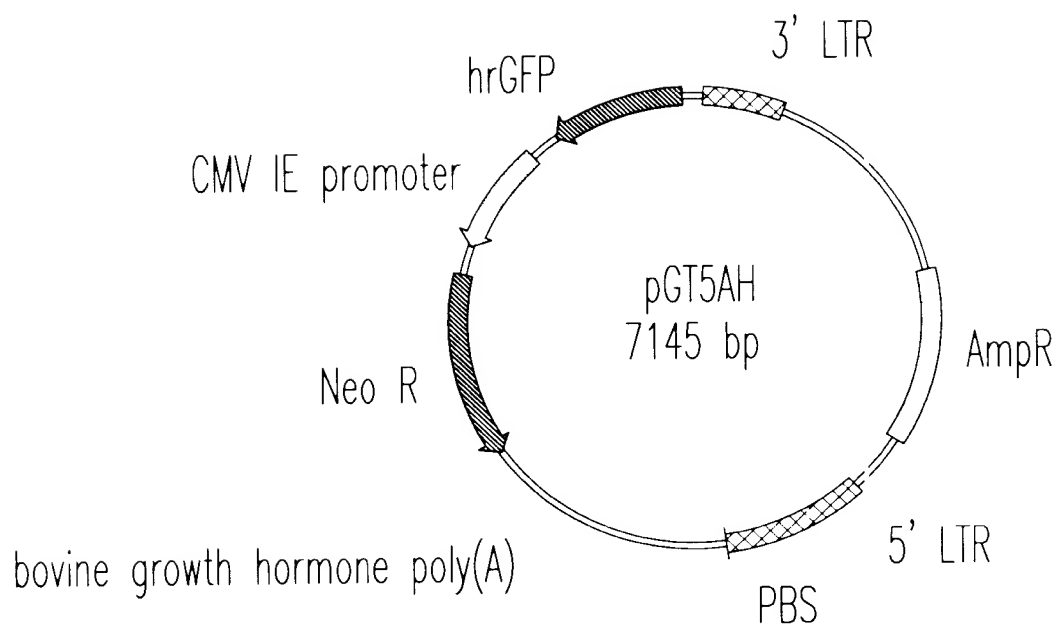
**Fig.3**



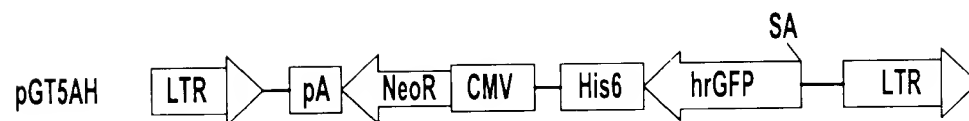
**Fig. 4A**



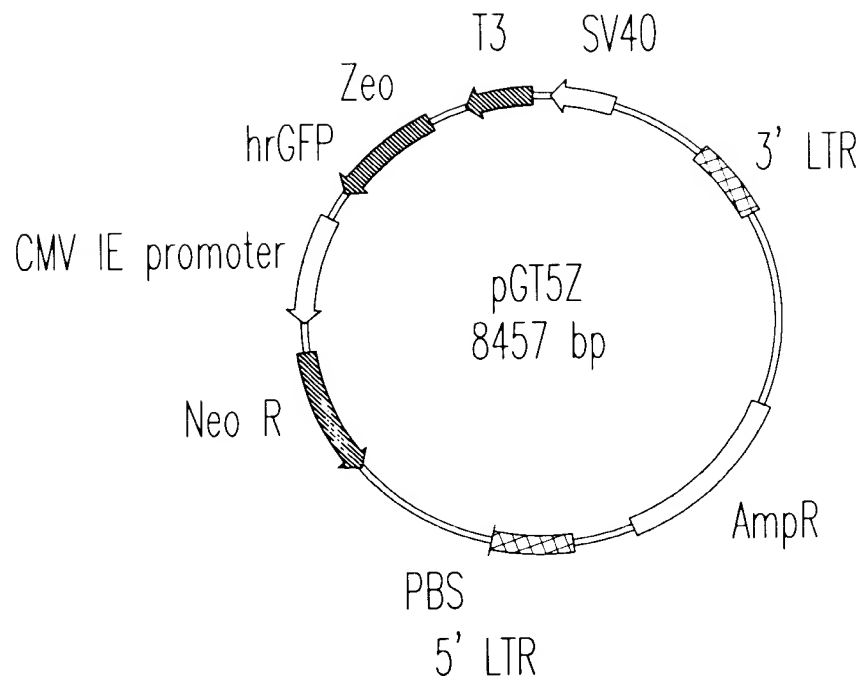
**Fig. 4B**



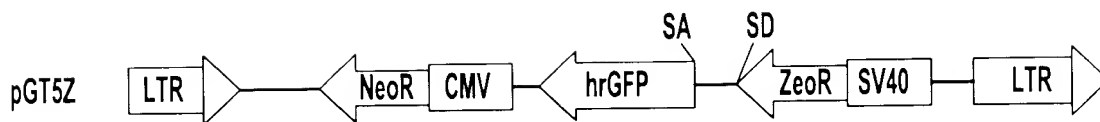
**Fig. 5A**



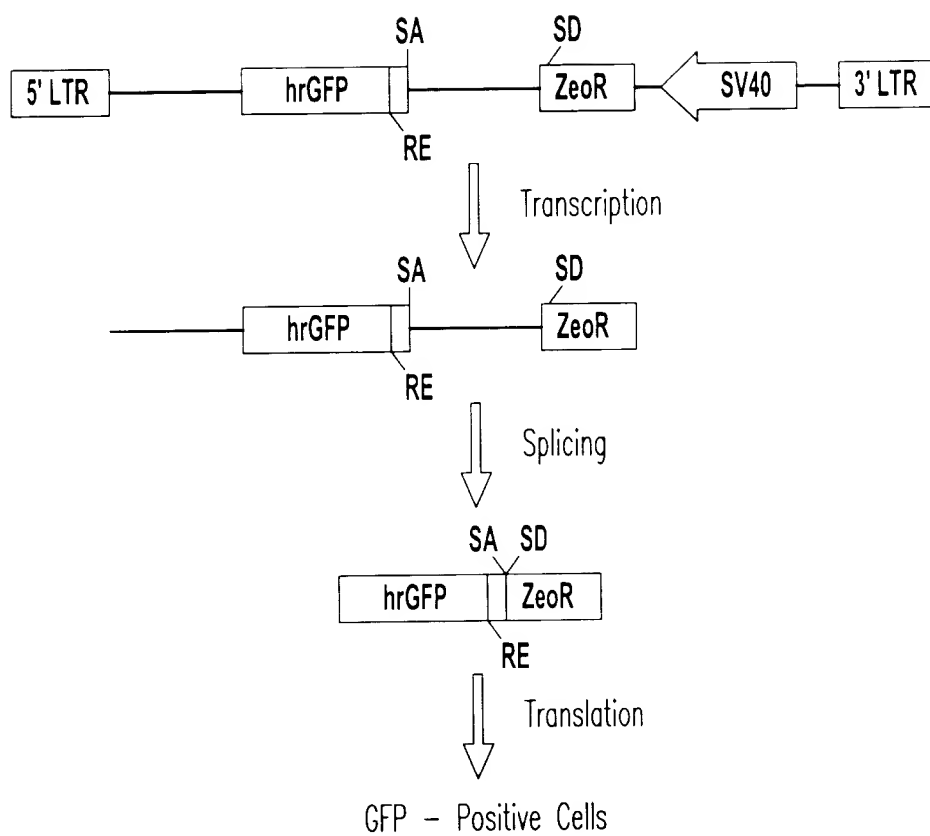
**Fig. 5B**



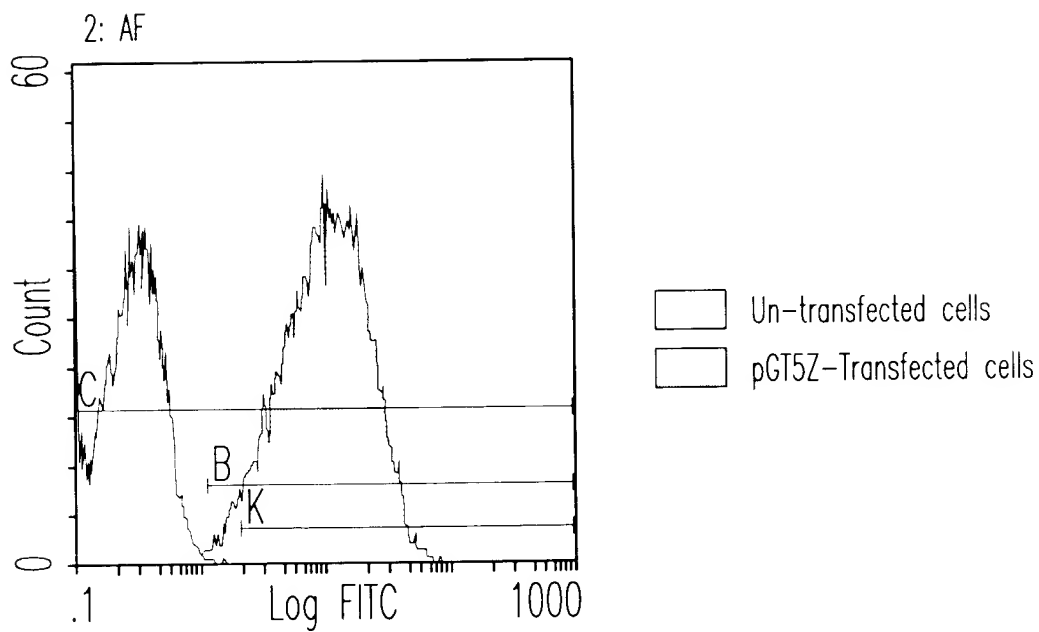
**Fig. 6A**



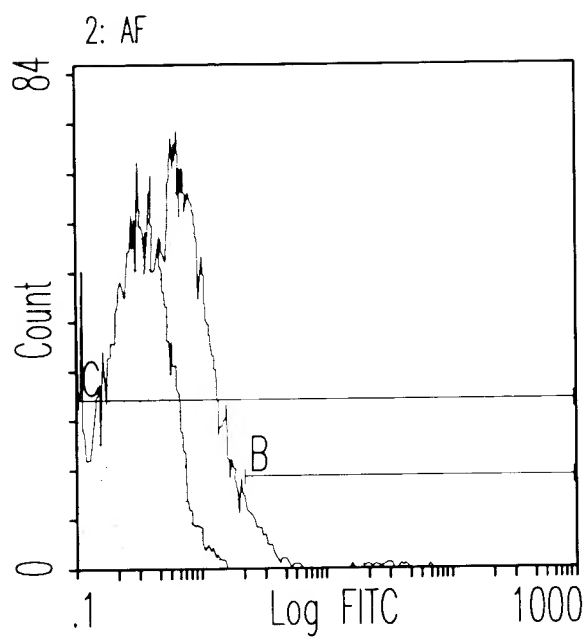
**Fig. 6B**



**Fig. 7A**

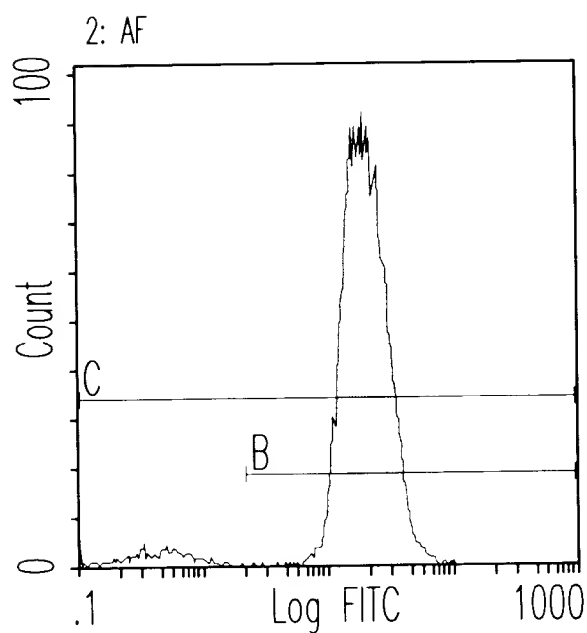


**Fig. 7B**



- ☐ GFP (-) population
- ☐ GFP (+) population
- ☐ PA317 without transfection

**Fig. 8A**



- ☐ GFP (-) population
- ☐ GFP (+) population
- ☐ PA317 without transfection

**Fig. 8B**



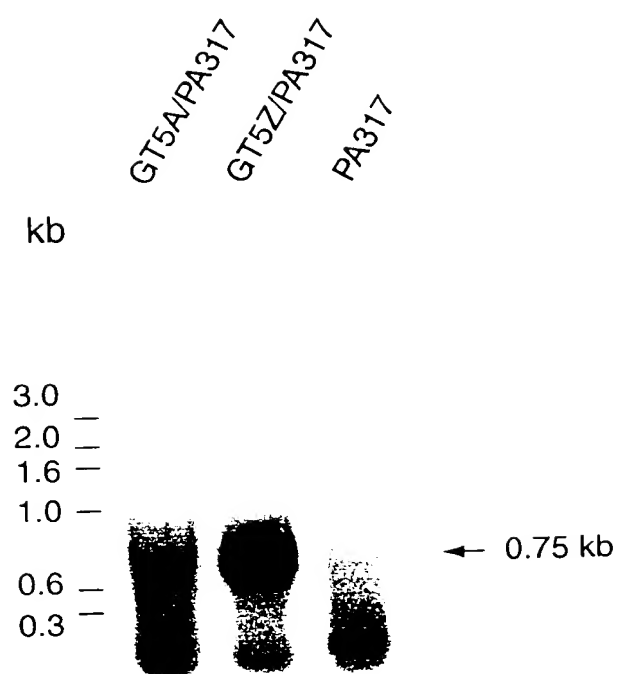
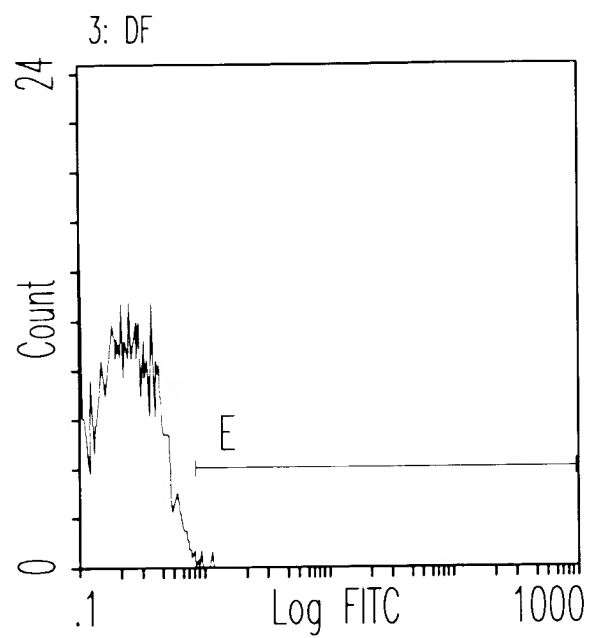
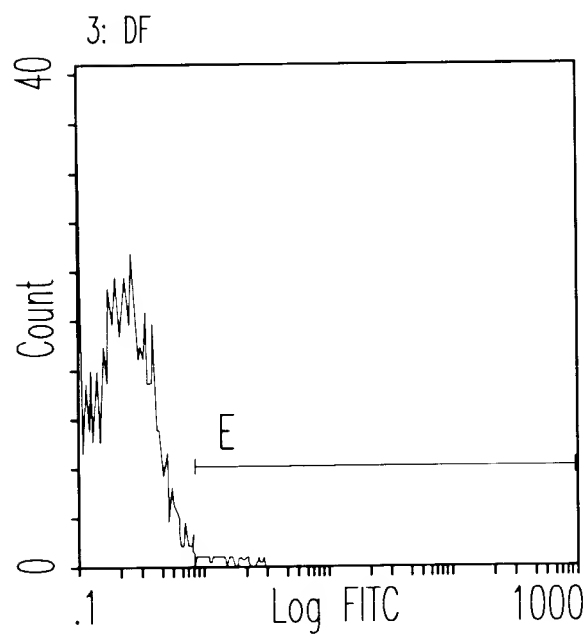


Fig. 9



**Fig. 10A**



**Fig. 10B**

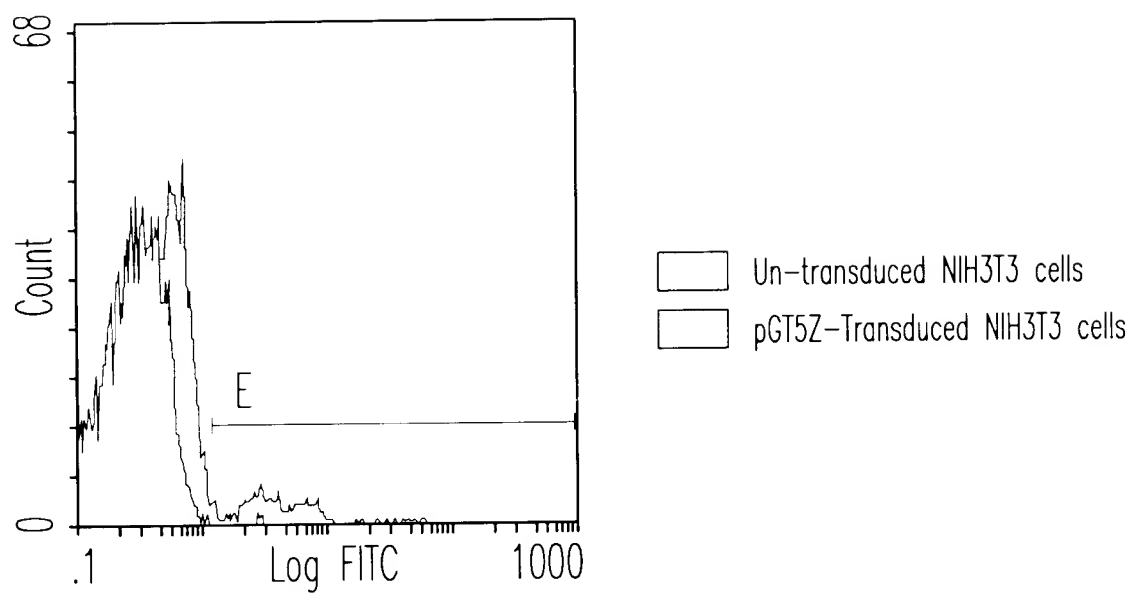
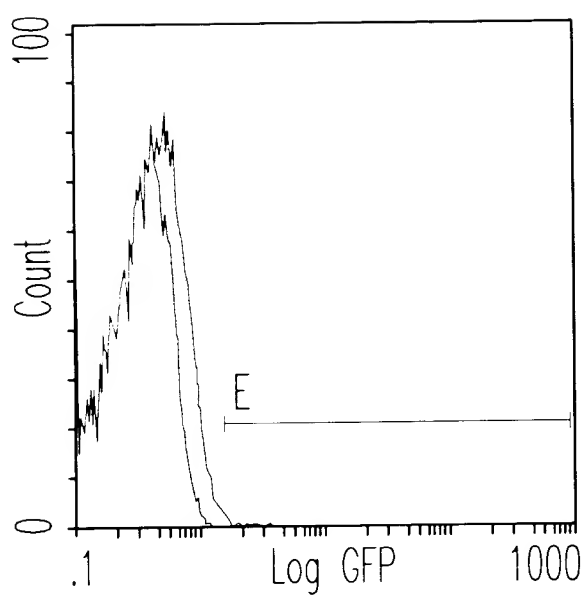
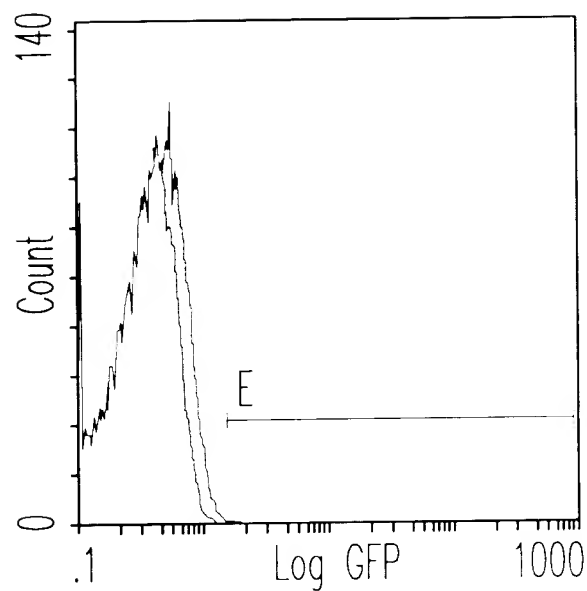


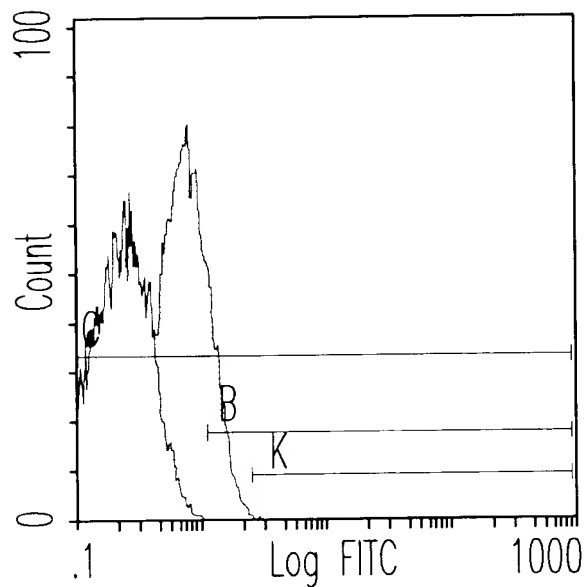
Fig. 11



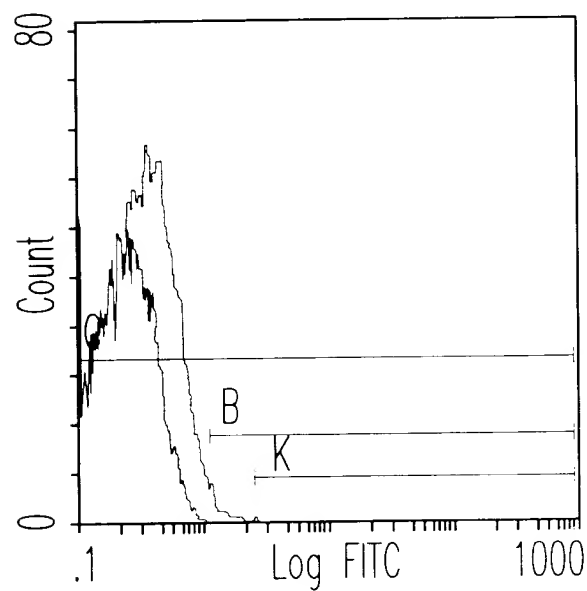
A6P1



C4P2



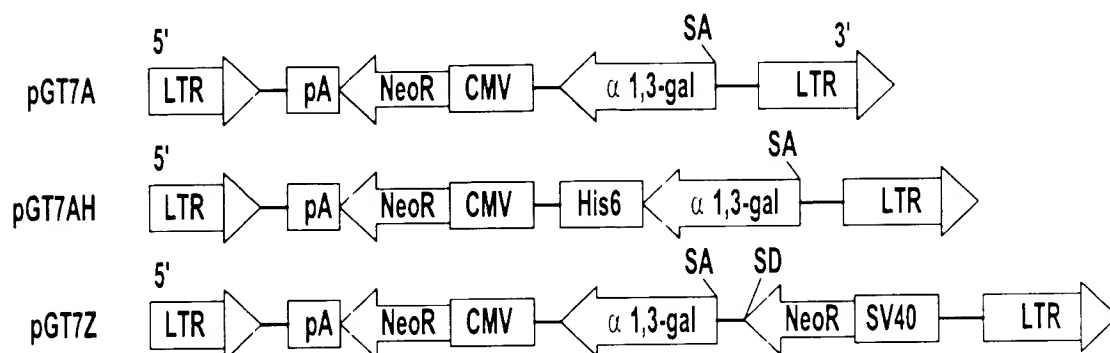
C8P2



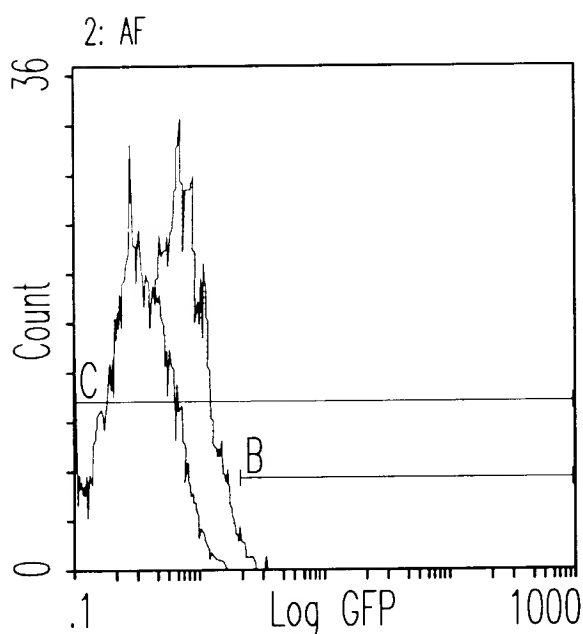
H8P2

☐ Un-transduced NIH3T3 cells  
☐ Single-cell clones of transduced NIH3T3 cells

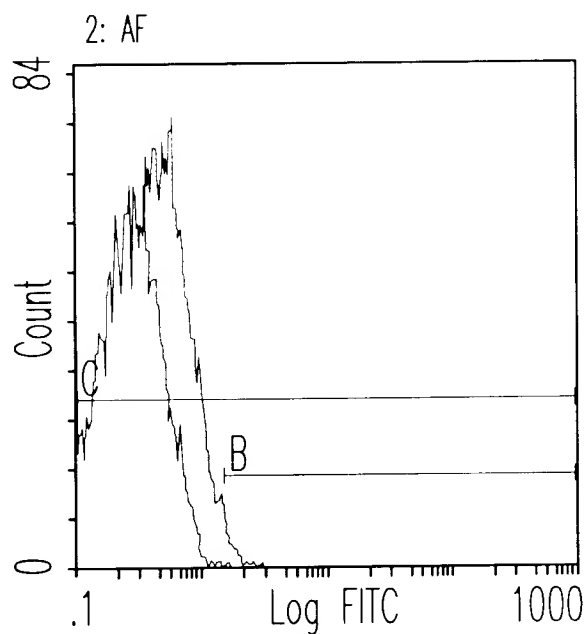
**Fig. 12**



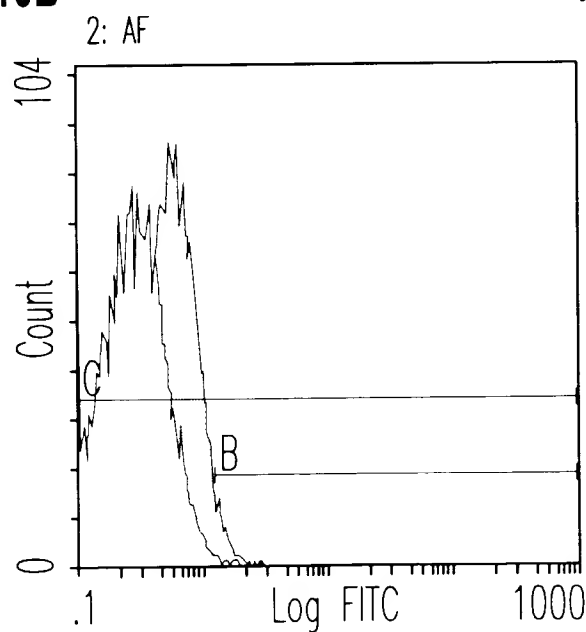
**Fig. 13A**



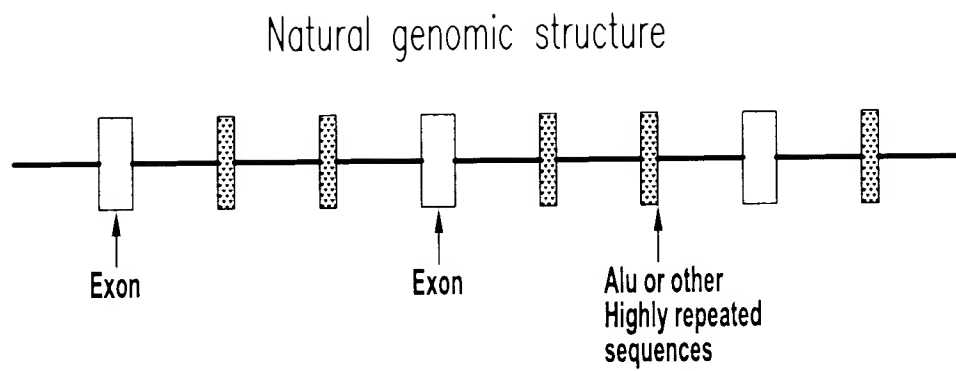
**Fig. 13B**



**Fig. 13C**



**Fig. 13D**



Example Vector for Homologous Recombinations

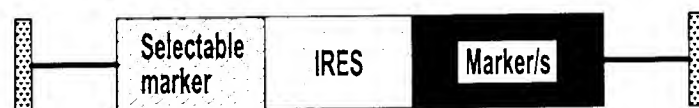
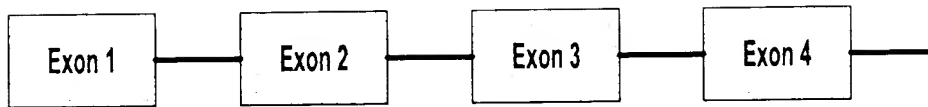
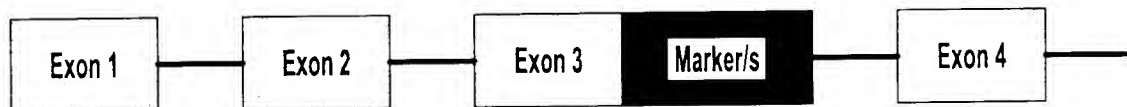


Fig. 14

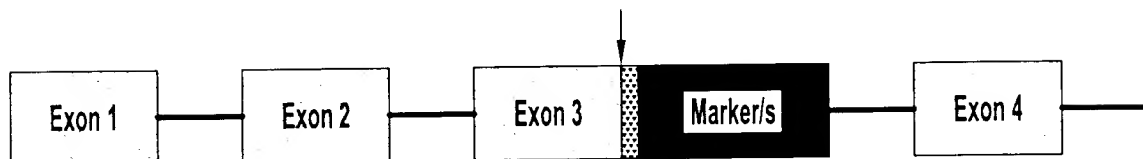
Natural genomic structure



Transfection and integration of vector/s by illegitimate recombination



1bp added to change  
reading frame



2bp added to change  
reading frame

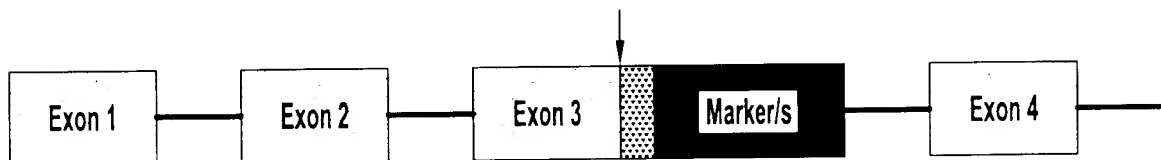
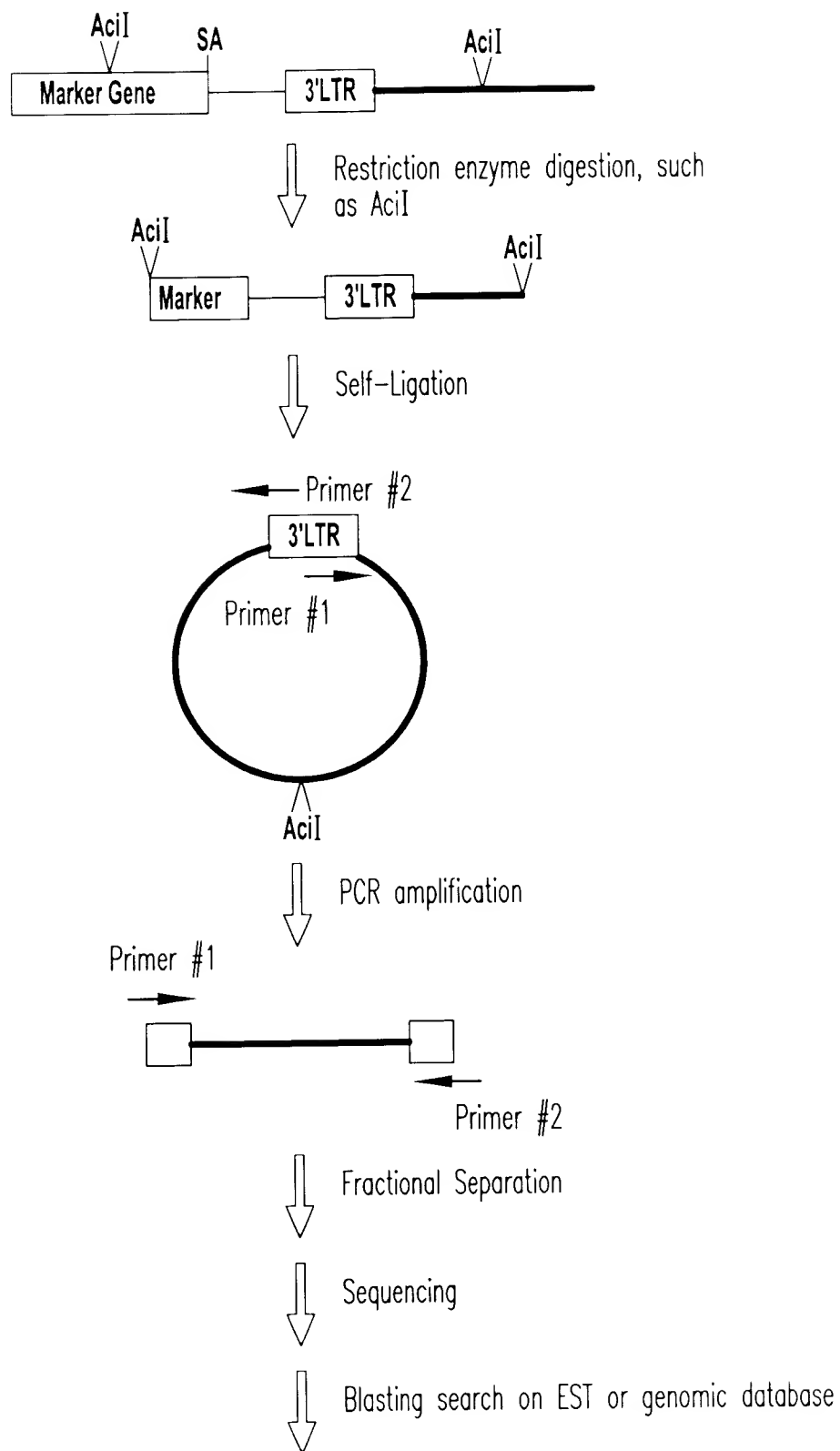


Fig. 15



Gene Expression Profiling Databases on target cells vs. counterpart

**Fig. 16**



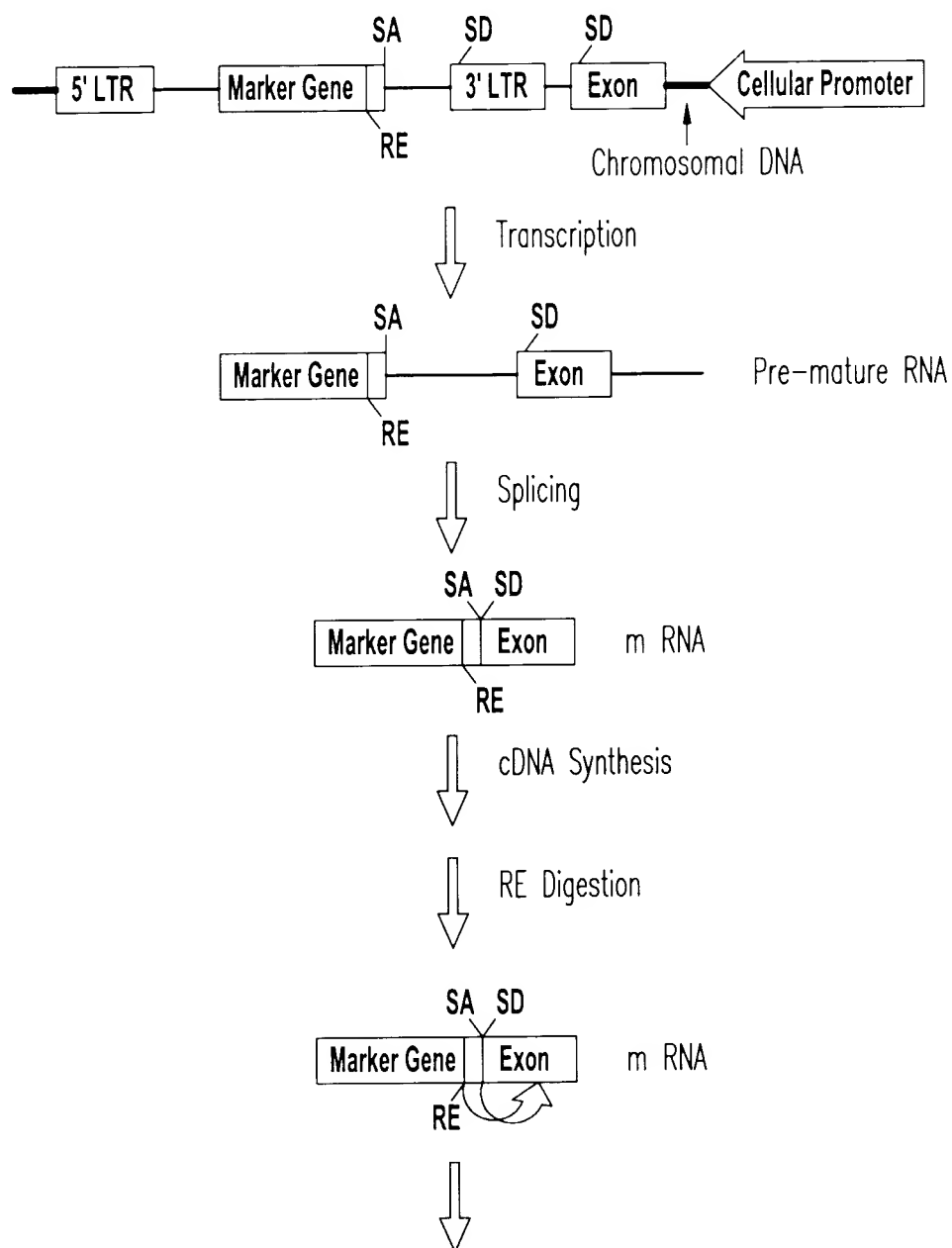
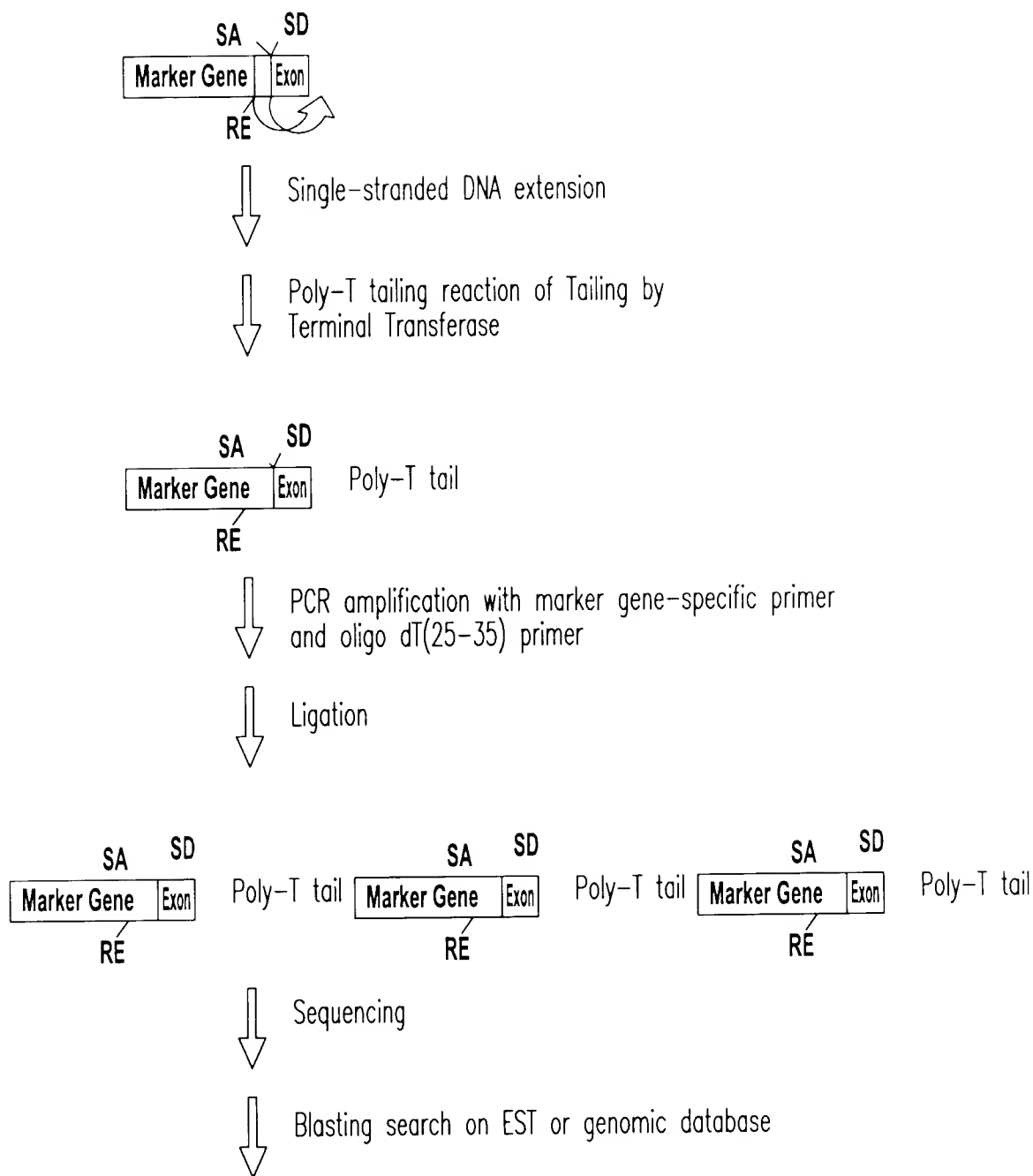


Fig. 17A



Gene Expression Profiling Database on target cells vs. counterpart

**Fig. 17B**

PROCESS STEP

EXAMPLES

Cell Set



colon cancer/vs.  
normal colon cells  
  
or  
  
lung cancer /vs.  
normal lung epithelium  
  
or  
  
young organism cell set/vs.  
old organism cell set

Vextor Tag



MLLV w/  
hrGFP  
  
or  
  
 $\alpha(1,3)$ galactosyltransferase  
  
or  
  
DNA transfection

Measurement



FACS scan for hrGFP florescence  
or  
ELISA for hrGFP protein  
or  
FACS scan for  $\alpha(1,3)$ GT induced  $\alpha$ -gal Ag  
or  
ELISA of  $\alpha(1,3)$ GT protein  
or  
use of magnetic field or chemiluminescence  
or  
enzymatic reaction for protein quantitation

PCR



STARS  
or  
SAVI  
or  
PCR

Sequencing



pyro sequencing  
or  
AB1 Machine Sequencing  
or  
sequencing

Database



cancer cells database  
or  
normal cell database

**Fig. 18A**

PROCESS STEP

Search Process



Comparative  
Proteonomics



Pathway  
Analysis



Target  
Validation/  
Diagnostics



Drug  
Development

EXAMPLES

Parallel BLAST search EST  
or  
Search Genome database full sequence to define intron/exon  
or  
Alternative splicing database

Compare colon cancer cell to normal colon epithelium  
or  
Compare lung cancer cell to normal lung cell

multigene co-variant  
or  
Specific cell circuit analysis e.g. cell cycle

Monoclonal kb diagnostics Northern analysis, Western analysis  
or  
DNA assay/gene chip comparison  
or  
SNP Associations  
or  
Yeast 2-hybrid fishing for protein partner

monoclonal Antibody treatment  
or  
small molecule library search and/or  
treatment  
or  
gene therapy  
or  
anti-sense  
or  
Ribozyme  
or  
any other conventional  
pharmaceutical drug development

**Fig. 18B**

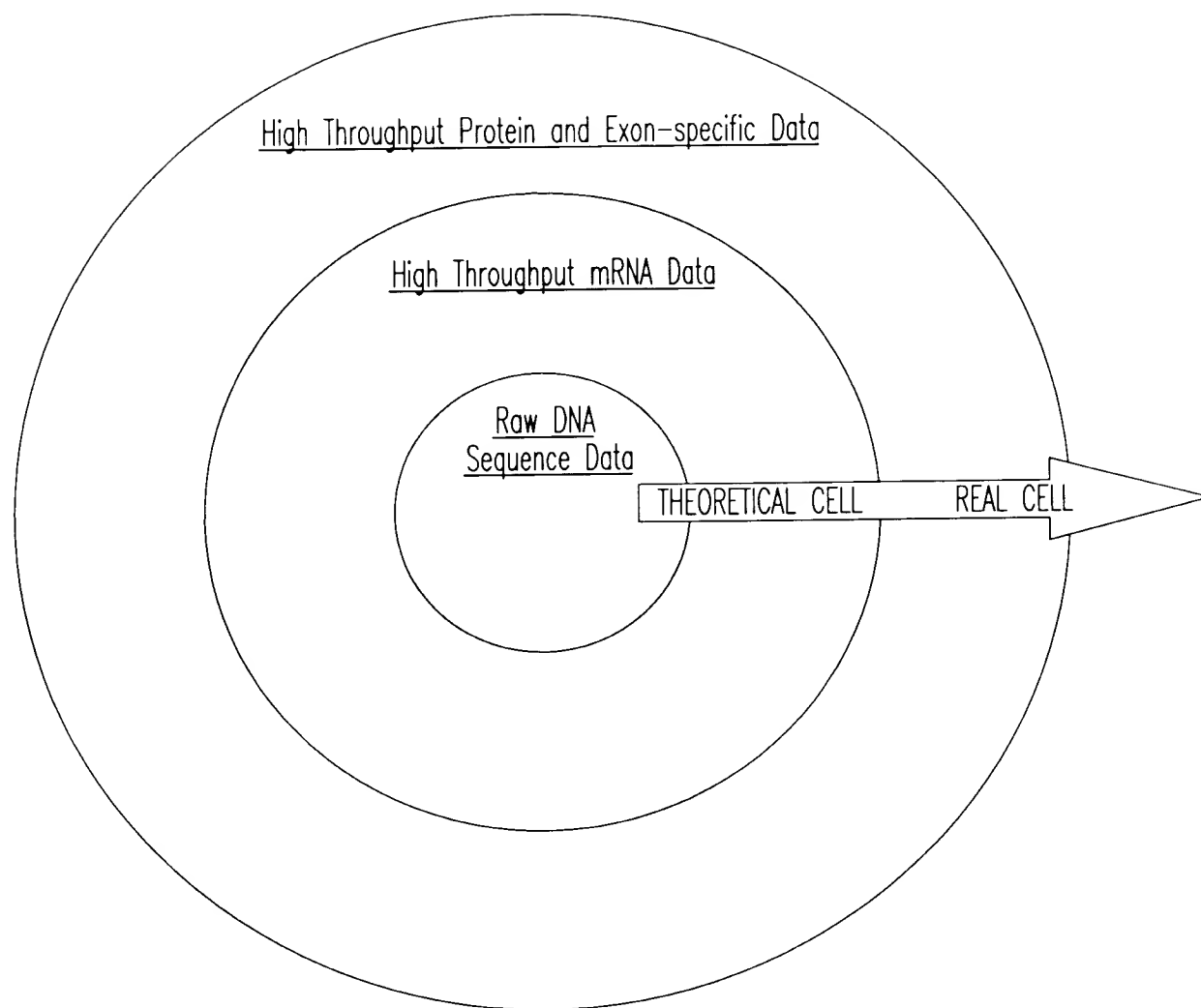


Fig. 19

Validation sequence/Splicing  
junction

1 ttnnccgnga aagctcctcg ccttgctca ccatgggatg ccatttecta ggtctgctc

NcoI                      Gene trapped exon  
cloning site              of HMGI-C gene

61 ttggcggttt ttctccaatg gtctctgctt tcttctgggc tgcttttagag gggctcttgt

121 ttttgetgcc tttgggtctt cctctgggto tcttaggaga gggctcacag gttggctctt

181 gctgetgctt cctgggtcgg ccgcgtcttc gcttctgtgg caccggggcg gcaggttgtc

241 cctgggctga tgtggacggc tgcccggcgc cctcaccgcg tgcgtcctc ctgectcccg

301 ccgcgctac cactgectct cttttttttt tttttttttt tttttgaaan ccccgggnnn

361 nnnnnnnnnn nnnnc

Oligo-dT                      EcoRI  
primer                      cloning site

//

Fig. 20

Validation sequence/Splicing  
junction

1 tcngcgacca nctcctcgcc cttgctcacc atgggatgct cccgggtggtg ggtcgggtggt

NcoI      Gene trapped-exon  
cloning site

61 ccctgggcag gggctctcaa atcccggacg agcccccaaa tgaaanaccc ccgtcntggg

121 tagtcaatca ctcagaggag accctcccaa ggaacagcga gaccactntt cggatgcana

181 cagcaagagg ctttattggg aatncgggta cccggggcgac ncantctatc ngaagactgg

241 cgttattttt tttntttttt ttttttgaat tncnngggac anccnnctna gnntanctnc

Oligo-dT      EcoRI  
primer      cloning site

301 nctntnnnct nccctcetta cttctnntnt ntn

//

Fig. 21